

20 Cents

# THE FORESTER

Vol. VII

SEPTEMBER, 1901

No. 9

## CONTENTS:

DESTRUCTION OF A FOREST BY FIRE IN PRIEST RIVER FOREST RESERVE	<i>Frontispiece</i>
SUMMER MEETING OF THE AMERICAN FORESTRY ASSOCIATION . . . . .	209
OUTLOOK FOR FORESTRY IN THE PHILIPPINES. (Illustrated) . . . . .	211
THE OPEN RANGE AND THE IRRIGATION FARMER. PROF. R. H. FORBES . . . . .	216
	<i>Director Arizona Agricultural Experiment Station</i>
THE FIRST SESSION OF THE YALE SUMMER SCHOOL OF FORESTRY. (Illustrated). GEORGE D. SEYMOUR . . . . .	220
INVESTMENTS OF SAFETY AND PROFIT . . . . .	224
FORESTS AND RESERVOIRS. (Illustrated). F. H. NEWELL . . . . .	225
	<i>Hydrographer U. S. Geological Survey.</i>
EDITORIALS	
William McKinley. The Denver Meeting. Forestry in the Philippines . . . . .	229
NEWS, NOTES AND COMMENT	
The Tennessee Forest Association. Meetings in New Hampshire. Irrigation and the Forest. Foresters for the Philippines. Appalachian Forest Reserve. Death of Capt. Cross. Fire Record.	230

Published by

The American Forestry Association  
Lancaster, Pa., and  
Washington, D. C.

Entered at the Post Office of Lancaster, Pa., as second-class matter.

## THE PLATFORM OF THE FORESTER

In order that the good will of its readers may become as effective as possible in aiding to solve our present forest problems, the FORESTER indicates five directions in which an effective advance is chiefly needed.

1. The forest work of the United States Government which is now being carried on by the Department of Agriculture, the General Land Office, and the Geological Survey conjointly, should be completely and formally unified. The division of authority between the three offices involves great waste, and consolidation is directly and emphatically pointed to by the present voluntary co-operation between them.

2. A system of forest management under the administration of trained foresters should be introduced into the national and state forest reserves and parks.

3. Laws for the protection of the forests against fire and trespass should be adapted to the needs of each region and supported by the provisions and appropriations necessary for their rigorous enforcement.

4. Taxation of forest lands should be regulated so that it will encourage not forest destruction but conservative forest management.

5. The attention of owners of woodlands should be directed to forestry and to the possibilities of applying better methods of forest management.

Persons asking themselves how they can best serve the cause of forestry will here find lines of work suggested, along which every effort will tell. No opportunity for doing good along these lines should be neglected.

## FOREST SCHOOL

AT BILTMORE, N. C.

The lectures cover, in the course of a year, all branches of forestry exclusive of forest aesthetics and of forest gardening.

The Biltmore School is directly connected with the forestal management of the Biltmore Estate, a tract of land comprising 110,000 acres. This Estate is the only place in America at which the methods and the results of economic forestry can be studied.

Daily excursions secure for the student an intimate acquaintance with the practical and administrative side of forestry.

For further information apply to

1. The yearly course comprises 12 consecutive months.
2. A special winter term will be opened on October 1, 1901.
3. A three-monthly tour through the European forests will begin April 1, 1902.

C. A. SCHENCK, Ph.D., Biltmore, N. C.

## HENRY ROMEIKE,

The First Established and Most Complete  
Newspaper Cutting Bureau in the World.

110 FIFTH AVENUE,

NEW YORK.

ESTABLISHED LONDON, 1881; NEW YORK, 1884.

BRANCHES: LONDON, PARIS, BERLIN, SYDNEY.

### THE PRESS CUTTING BUREAU

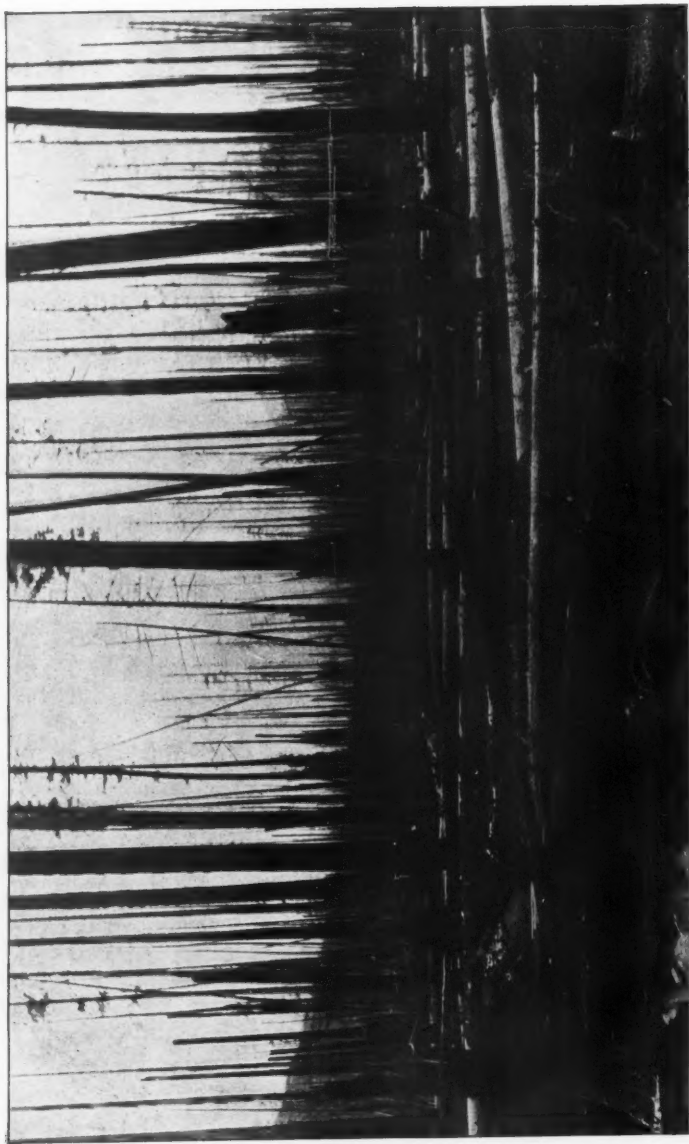
which I established and have carried on since 1881 in London, and 1884 in New York, reads, through its hundreds of employes, every newspaper and periodical of importance published in the United States, Canada and Europe. It is patronized by thousands of subscribers, professional or business men, to whom are sent, day by day, newspaper clippings, collected from all these thousands of papers, referring either to them or any given subject.

## HENRY ROMEIKE,

110 FIFTH AVENUE,

NEW YORK.





COMPLETE DESTRUCTION OF A FOREST BY FIRE, IN PRIEST RIVER FOREST RESERVE, IDAHO.

# THE FORESTER.

VOL. VII.

SEPTEMBER, 1901.

No. 9.

## SUMMER MEETING OF THE AMERICAN FORESTRY ASSOCIATION.

THE summer meeting of the American Forestry Association was held at Denver, Col., August 27-29, in affiliation with the American Association for the Advancement of Science.

This meeting was a distinctly western one, and the papers and discussions were mainly upon the forest problems now most prominently before the western states, fires, grazing in the forest reserves, and relation of forests to water supply. The members in attendance included many of the best known workers in the cause of forestry, and at the several sessions there was read a series of most timely papers on the subjects noted above. These papers will be published in full in forthcoming numbers of *The Forester*.

Morning and afternoon sessions were held daily at the Denver High School building. There was a public meeting on Wednesday evening, August 28, at the Central Presbyterian Church.

The morning session on the opening day, Tuesday, August 27, was devoted to the transaction of business, presentation of communications, memorials and the appointment of committees. The afternoon was devoted to the reading and discussion of papers on United States Government forest work.

Both the morning and afternoon sessions of the second day were devoted to irrigation and hydrography.

A most interesting set of papers were presented and there was considerable discussion. The program of the public

meeting on the evening of the second day was made up of illustrated lectures by Mr. Gifford Pinchot and Mr. F. H. Newell, and addresses by the Hon. Platt Rogers and Mr. George H. Maxwell.

The third and last day of the meeting was devoted to the reading of papers on miscellaneous topics and to completion of unfinished business.

### PROCEEDINGS

#### MORNING SESSION.

*Tuesday, August 27th.*

The opening session began promptly at 10:30, Tuesday morning in the Denver High School Building, with Mr. Henry Michelsen, Vice-President for Colorado, in the chair, and Mr. Otto J. J. Luebker, Acting Secretary. Mr. Michelsen introduced Hon. Thomas M. Patterson, United States Senator from Colorado, who made the address of welcome. Senator Patterson in greeting the members of the American Forestry Association, touched upon the great need of forest preservation for the state of Colorado, saying that he was in sympathy with the work of the Association, and that he was glad to offer his own support and that of his paper, *The Rocky Mountain News*, to the cause.

Following the address of welcome a memorial on the late Dr. Charles Mohr was read. The morning session ended with the appointment by the chair of a Committee on Resolutions. The committee selected was Mr. Gifford Pinchot,

Mr. F. H. Newell, and Mr. H. M. Suter. The Association then adjourned until the afternoon.

#### AFTERNOON SESSION.

This session was devoted to the reading and discussion of papers on the United States Government forest work. The opening paper was read by Mr. Wm. L. Hall, on "Progress in Tree Planting." Mr. Gifford Pinchot, Chief of the Bureau of Forestry, followed, his subject being, "Grazing in the Forest Reserves." "The Black Hills Forest Reserve," by Mr. Edward M. Griffith, was the next paper read; and Professor L. H. Pammel read the last paper of the session on "What should be the Policy of the United States Government in the Uintah Forest Reserve?" The session then adjourned until the next day.

#### MORNING SESSION.

*Wednesday, August 28th.*

The sessions on this day were devoted to the reading and discussion of papers on irrigation and hydrographic work.

The morning session opened promptly at ten o'clock, Mr. A. L. Fellows, of Denver, being the first on the program with his paper on "The Hydrography of Colorado." Mr. F. H. Newell, Hydrographer of the U. S. Geological Survey, read an interesting paper on "Forests and Reservoirs," Professor R. H. Forbes, Tucson, Arizona, read a most interesting paper on "The Open Range and the Irrigation Farmer." The last paper of the morning session was on the "Reclamation of the Arid Region," by Mr. R. L. Fulton, of Reno, Nevada. The meeting was then adjourned until the afternoon.

#### AFTERNOON SESSION.

This session opened at 2:30 with a paper on "The Boundary Line Between the Forest and the Desert," by Mr. S. J. Holsinger, Phoenix, Arizona. It was followed by Mr. George H. Maxwell, Executive Chairman of the National Irrigation Association, who delivered an address on "Irrigation and the Forest." Mr. T. P. Lukens, Pasadena, California, then read

a paper on "The Reforestation of Watersheds." In the absence of Mr. Wm. H. Knight, Los Angeles, California, his paper on "The Underflow of Water in Southern California," was read by Mr. Luebker.

#### EVENING SESSION.

The most important session was the public meeting held on Wednesday evening, in the Central Presbyterian Church, which was attended by a large and appreciative audience. Honorable Platt Rogers, of Denver, was the first speaker. He was followed by Mr. F. H. Newell, who delivered an illustrated address on "Forests and Irrigation." Mr. Gifford Pinchot then delivered an illustrated address on "The Government and the Forest Reserves." He was in turn followed by Mr. George H. Maxwell, who made an address on "The Relation of Forests to Irrigation." The meeting then adjourned.

#### MORNING SESSION.

*Thursday, August 29.*

At this session papers on miscellaneous subjects were presented. Professor A. D. Hopkins, of Morgantown, West Virginia, read the first paper on "Insect Enemies of the Forests and Forest Products." Professor Wm. R. Dudley, Stanford University, California, was unable to be present, but his paper on "The Santa Lucia Silver Fir," was read by Mr. Leubkert. Following came a paper on "Twenty Native Forest Trees of Nebraska," by Prof. Charles E. Bassey, Lincoln, Nebraska.

Professor. W. J. Beal, of Lansing, Michigan, was next, and read a paper on "The Future of the White Pine in Michigan." Professor A. D. Hopkins read a second paper on "The Forest Conditions in West Virginia." Mr. George B. Sudworth, of the Bureau of Forestry, was unable to be present and his paper on "Forests and Their Relation to Agriculture and Manufacturing Industries," was read by Mr. Luebker.

A letter of regret from Mr. W. R. Castle, Vice-President for the Hawaiian Islands, was received by Mr. Luebker.



The members present moved that the letter be read and entered in the records; which was done. This letter contained an interesting description of forest conditions in Hawaii. The session then adjourned until the afternoon.

#### AFTERNOON SESSION.

This session, which was the last of the meeting, was devoted to hearing reports of committees and the disposal of unfinished business. The Committee on Resolutions reported the following resolutions, which were read and unanimously adopted by the Association:

*Resolved*, That we urge upon the Congress of the United States and the Federal authorities, the importance of setting aside as forest reserves all considerable bodies of public land whose character is such that they are more valuable for forests than for agricultural or other industrial purposes, and further that steps be

taken to afforest the vacant or waste public lands of the prairie states.

*Resolved*, That if the results of the investigation ordered by the Congress of the United States demonstrate that it is advisable to set aside and devote to forest reserve purposes, any of the land in the Leech Lake Indian Reservation, the Winnibigoshish Indian Reservation, or the "Mississippi" Chippewa Indian Reservation, and the Cass Lake Indian Reservation, known as pine lands, and such other lands, if any, as are unfit for agriculture and are not required for Indian allotments, then, and in that event, we most respectfully petition the Congress of the United States to take such action as may be necessary to accomplish such results.

A vote of thanks was tendered Mr. Henry Michelsen, and the people and press of Denver, for the many courtesies shown the members of the Association. The Association then adjourned *sine die*.

### OUTLOOK FOR FORESTRY IN THE PHILIPPINES.

CAPTAIN GEORGE P. AHERN, director of the Forestry Bureau at Manila, who has been in the United States for several months past studying forest conditions, will leave for the Philippines late in September to again take up his duties there.

Acting on the authority of the Taft Philippine Commission Captain Ahern while in the United States visited the forest schools of Cornell, Yale and Baltimore for conference with the professors, graduates, and students of those institutions. He was further authorized to employ three additional inspectors and three foresters for the bureau at Manila.

The requirements of the Commission were that inspectors should be graduates of an accredited forest school, and that the foresters should be graduates of an approved forest school and also have field experience. Candidates were also required to pass a civil service examination.

Accordingly Captain Ahern arranged an examination for the men who had applied for positions in the Philippine forest service. This examination was held in Washington, September 9, the result being announced on another page of this number.

Captain Ahern before leaving for the Philippines gave *The Forester* the interview that follows. The accompanying illustrations were made from photos kindly loaned by Captain Ahern.

In speaking of the outlook for forestry in the Philippines, Captain Ahern said: "I consider the Philippines the most interesting field in the world for the practice of scientific forestry. There are more than 50,000,000 acres of public woodland in the archipelago. Up to date 665 species of trees have been classified and it is the opinion of botanists that a close examination will bring the total up to fully 1,000. In several large districts of the southern islands of

the archipelago, more than 50 varieties of rubber trees are found. The true gutta percha (*Isonandra gutta*) is found there. Hardwoods make up the bulk of the timber found, a number of these being especially valuable for ship-building.

"The forest service in the Philippines will grow, and more men will be needed from time to time. The Bureau of Forestry

established at Manila, and will be in the charge of Mr. S. T. Neely, who conducted the timber testing for the Division of Forestry a few years ago. The work at this laboratory will include the investigation of all native woods, methods of preservation, and economic uses. During the first year or two the effects of the Bureau will be concentrated on learning what we



MEASURING LOGS IN RAFT ON TONDO BEACH, MANILA. THIS PICTURE SHOWS METHOD OF MAKING A RAFT BY TYING LOGS WITH BAMBOO STRIPS.

of the United States Department of Agriculture has been made an agent for the Forestry Bureau of the Philippines in securing men for the service there. Only men who have had some training in forestry will be considered, and all applicants will be required to take the Civil Service examination. Arrangements are being made with the forest schools of the United States looking to the establishment of courses in the study of Gutta Percha and Rubber. At present there is no official in the Philippines competent to take charge of the large rubber and gutta percha districts.

"A timber testing laboratory is to be

have in the way of forest products, the uses of the woods, and looking up markets.

"The Forestry Bureau of the Philippines during its first fiscal year produced in revenue over \$199,000 (Mexican), solely from forest products, and it may be stated that the receipts were quite poor during the early months, thus showing a remarkable gain as the year advanced. At present the revenues are almost \$30,000 (Mexican) per month.

"The Spanish administration in its best years never collected over \$12,500 per month (Mexican), from the sale of forest products and there is this interesting dif-





LOGGING RAILROAD ON PRIVATE WOODLAND IN TARLAC PROVINCE, LUZON, P. I.



HAULING LOGS IN TARLAC PROVINCE, LUZON, P. I. THE WAGON WHEELS ARE SOLID WOOD.

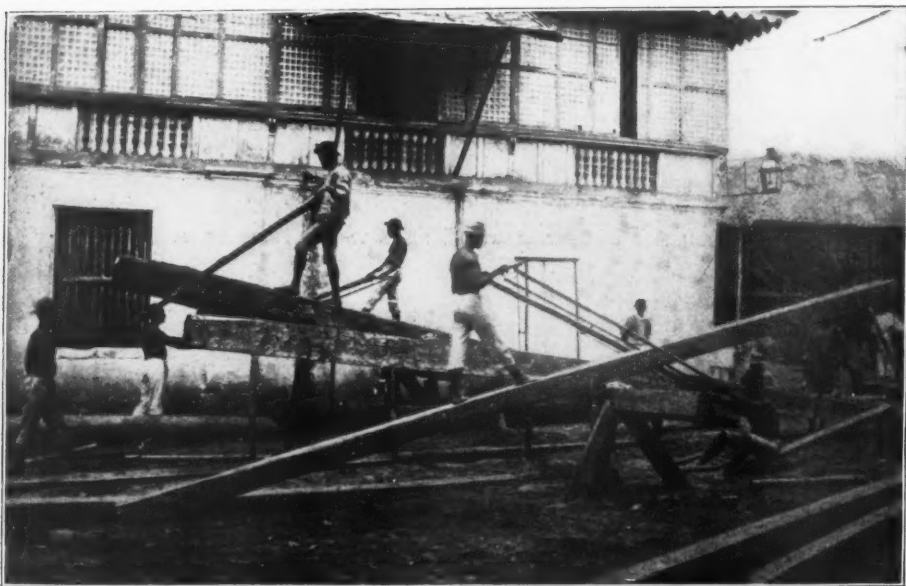
ference to be noted: Spain charged more than 90 per cent. of the revenue receipts for service and materials. Under the present Bureau only 26 per cent. of the revenues go for service and materials. Spain on an average issued 1,000 licenses per year while the United States has about 500 licensees operating.

"As to the question of markets, at present every stick of timber cut is sold in Manila. People in other provinces are unable to get timber owing to the high prices paid by consumers in Manila; but in a year or two people in other provinces will begin to build and when they are

at a figure to compete favorably with the hardwoods of Central and South America. In, say, from five to ten years the Philippines will be able to supply the entire demand of the archipelago, and a great deal of Oriental trade, especially at Hong Kong and other Chinese ports. China will certainly be the best market.

"A great deal of building is going on in Manila, and better houses are being erected since the arrival of the Americans. Many towns were burned during the war, and the people have been unable to rebuild them owing to the lack of material.

"Present methods of lumbering are en-



NATIVE METHOD OF SAWING TIMBER. THE NATIVES FIND THIS PRIMITIVE METHOD OF SAWING PROFITABLE EVEN WHEN COMPETING WITH A STEAM SAWMILL.

somewhat satisfied, builders in Hong Kong and other Oriental ports may secure a few cargoes. Engineers at Hong Kong were informed last December that it would be three years before they could receive any timber from the Philippines.

"The United States will receive only a few of the high grade cabinet woods which can be delivered in San Francisco,

tirely too primitive. The Spaniards and Filipinos do the bulk of the cutting, very few Americans being engaged. The natives are poor lumbermen and in comparison with the Americans as workmen are greatly outclassed, one American being as useful as half a dozen Filipinos.

"In lumbering operations in the Philippines the question of transportation is the

most serious one. Wagon roads are poor, there is but one railroad, and the rivers are not in good condition for log driving; though there are many streams that with a little cleaning out will do very well for log driving. At present the only mode of transportation is the water buffalo or caribao, an animal much weaker than the ox used in American lumbering. There are also the Filipino ponies which are small and lack strength, but there are no Amer-

past year has been only 30,000,000 feet, board measure.

"Mr. Ribbentrop, lately retired Inspector General of the Forests of India, has written to us, in reply to an invitation from our Bureau, offering his services for the purpose of devising a rational forest policy for the Philippines. We are much pleased at Mr. Ribbentrop's offer, and it is hoped that arrangements can be made to secure his services, as the forest problems



HAULING LOGS INTO TARLAC, LUZON, P. I. FOUR BUFFALOES AND THREE DRIVERS TO HAUL ONE MEDIUM SIZED LOG. TO HAUL ONE LARGE LOG AS MANY AS TWENTY-SIX BUFFALOES AND DRIVERS IN PROPORTION HAVE BEEN SEEN.

ican horses in the Philippines except those belonging to the army. There has been some talk of importing elephants from India, but as attendants would have to be brought, and conditions are so different, the feasibility of the plan is doubted.

"To show the extent of lumbering operations under present methods it is only necessary to state that the cut of the

of the Philippines are much the same as those the Indian foresters have had to contend with. We also hope to secure for a limited period the services of a few of the conservators of the Indian forests to help out in the inaugural work of the Philippines. These men would be especially valuable owing to their practical experience under very similar conditions that are to be met with in the Philippines."

## THE OPEN RANGE AND THE IRRIGATION FARMER.\*

BY PROFESSOR R. H. FORBES,

Director of Arizona Agricultural Experiment Station.

## PART I.

AMONG the great public works, which look towards the upbuilding of the great West, especially important because of its immediate effects upon irrigation, is that of forest preservation and administration. "Save the forests" is the watchword of a great corps of scientific workers and their sympathizers, both public and private, and their efforts have resulted, throughout the West, in the safeguarding of great areas of forested watersheds, and of the interests immediately dependent upon them.

The popular idea of a forest, however, is that it is composed of great trees, with their attendant and dependent forms of life. But it must be considered and remembered that, throughout the great West, including the Great Basin, the Rocky Mountains, and the Great Plains regions, the areas which concern these workers and their abettors are but a minor fraction of the whole. The watersheds of many of our great irrigating streams throughout the West, are covered to but an insignificant extent with forests of the greater trees.

It is my purpose, however, to call your attention to-day to the fact that, especially in the Southwest, great watershed areas are forested with "little trees"—thousands of them to the square rod—which, making up by numbers what they lack in individual size, are no less potent than their greater brethren in governing the flow and behavior of the adjacent rivers.

\*One of the papers read at the summer meeting of the American Forestry Association, held at Denver, Col., August 27-29. We regret the necessity of having to publish this paper in two parts, but owing to its length and the many demands on our limited space we are compelled to present it in that way.—EDITOR.

I refer to the numerous grasses, so characteristic of vast areas of western country.

I will speak more in detail of that region best known to me, the Great Southwest, within whose vague boundaries are included a large part of western Texas, New Mexico, Arizona, southern Nevada, and a portion of southern California. This empire of deserts, mountain chains, and grassy valleys, industrially the youngest portion of the United States, and scientifically the least known, is at present undergoing botanical changes, and consequent industrial ones, of the greatest consequence to that region, and of instructive interest to other districts. Though speaking more particularly of the Southwest, the principles which there obtain may be in part applied to the various great grazing regions of the West.

As to its natural features the Southwest is characterized by few, though often torrential, rains, mild winters, and long, hot summers—conditions which render the country essentially semi-arid. In such a region, where the water supply is originally so scant, and where evaporation and the rapidly-draining soils lead to its rapid loss, the adjustment of plants to their surroundings is a very delicate and precarious one, and vegetation pursues various ingenious methods of self-maintenance. Some classes of plants hardily take Nature at her worst, and inure themselves to the severest conditions of heat and drouth that can be inflicted upon them. The *cacti*, for instance, contracting their surfaces to the least extent consistent with a certain bulk, and charging their juices with hygroscopic substances which resist evaporation, ask no mercy of sandy deserts and of blazing sun.

Pursuing another method, the *ocoteilla*,

in equally arid situations, puts forth its leaves during the brief rainy season, makes its gains, and then sheds its foliage when the hungry air again seeks to snatch away its moisture.

Many forms of vegetation contract their leaf-surfaces, or cover them with hairs or varnish, which restrict evaporation to the utmost. Other classes of plants, however, less harsh in nature, exert their ingenuity to supply themselves with a comparative abundance of water. Some develop extraordinary root-systems which penetrate deeply to underground supplies. The mesquite tree has been known to send its roots at least sixty feet below the surface in its eager search for water.

Other forms of vegetation start quickly and mature during the brief rainy seasons of summer and winter. The six-weeks grasses are so called because they start into activity and mature their seed in, approximately, that short period of time.

Still other forms avail themselves of the occasionally flooded valleys to construct and maintain storage reservoirs of their own, and live luxuriantly on the fruits of their wisdom. These last-mentioned, tendered forms of vegetation, including the grasses and other forage plants of the plains, constitute the great forests of "little trees" to which I have alluded, and more especially concern stockmen and, consequently, the irrigation farmer.

In explanation of this statement, I will present the case for a single grassy, typical, southwestern watershed—that of the Gila with which I am more familiar, in detail. The slopes tributary to the Gila River above the great bend and including that of the confluent Salt, have an area of about 45,000 square miles. For the most part this great area consists of originally grassy plains, now too often bare deserts, intersected by numerous mountain ranges clothed with forests on their upper slopes. Probably from eighty to ninety per cent. of this watershed is grass country.

It may, in consequence, be stated that the interests of irrigation in southern Arizona, and other regions of like character, are more concerned with the grassy and open range than with forested districts.

The history, present condition, and possible future of this country, and of the vast western and southwestern areas resembling it, should, therefore, be of immense interest to us.

Considered as a stock-raising country, New Mexico and Arizona are industrially young. Shortly after the Civil War, the establishment of military posts, and the issuance of treaty relations to the Apache Indians, created a heavy demand for beef. Large herds were driven from Texas into the lovely wild pastures of southern New Mexico and Arizona.

In their original condition, these grassy plains are said by those who first came to Arizona, to have been rarely beautiful to the eye, and even yet, in remote districts, comparatively unchanged by the operations of cattlemen, evidence of the truth of these statements is to be found. In the swales and valleys of this country, and wherever water was more abundant, the great bunch grasses grew luxuriantly. *Saoatas* and the *galleta* covered the ground thickly, affording an abundance of native hay in the dry season and quickly freshening up into green forage after a rain. In the same situation, also, was to be found a bewildering variety of quick-growing water grasses which afforded most nutritious feed while they remained green. On the knolls and in the drier places, the crowfoot grama and the six-weeks grasses, so called, supplemented, in the rainy season, the more abundant forage of the lower levels. When it rained upon these grass-covered plains, the water, being obstructed in its downward courses by the abundant vegetation, sank largely into the ground and very slowly made its way into the underflow of the great valleys, finally reappearing in the Gila River. In so doing, much of it was utilized by growing vegetation, while the residue, gradually joining the main watercourses, insured a constant flow. When severe storms occurred, with their resulting floods, the abundant bunch grasses at the lower levels obstructed the flow to such an extent that the water in its downward course, was spread laterally over great areas and its force dissipated. At the same time, the silt brought down



from the higher levels, including quantities of fertilizing material, was deposited in those places, with the result that the bottoms of the valleys were kept level and were enriched and made the scene of an ever-perpetuated growth of beautiful and luxuriant grasses.

But, after the completion of the Southern Pacific Railroad, in 1881, numerous small owners shipped in their herds from worn-out districts in Texas and elsewhere, while still others, driving their cattle overland to California, and deterred by the terrors of the Colorado desert, stopped by the way.

The multiplication of small herds, with their natural increase, together with restricted sales due to the low price of cattle at times during the eighties, soon caused the range to be stocked to its utmost capacity, even in favorable years. In seasons of scarcity, when feed was short, the cattle began to perish from starvation, devouring in their desperate struggle for existence, almost every vestige of growth upon the plains. Being compelled in their wanderings back and forth between the higher and lower grounds, to take twenty steps for a mouthful of food where formerly but one was necessary, they deepened their paths from place to place; the prevailing winds blew the dust from these paths until they lay inches below the general surface, and then, upon a country prepared for destruction, came the rains. The water, collecting in the trails from the bared and devastated surface of the country, fell swiftly to lower levels, gully-ing the trails as it ran, and gathering in destructive freshets in the larger valleys. The bunch grasses, having been depleted by the starving cattle, were no longer able to withstand the rush of the floods, and the gully-ing process began on a large scale through the very heart of what were formerly the most luxuriantly grassy regions of the country. When these channels are once established through a given district, the water is thereafter destined to flow through them, no longer spreading out over the level bottoms and no longer being available for the growth of the bunch grasses which formerly thrived in these

situations. In this way, when a valley has once been so gullied as to carry the water in streams, instead of spreading it out in broad floods, the very existence of the richest grazing districts is rendered impossible.

A striking instance of this process of ruin is offered by the San Simon Valley. This once beautiful district has been despoiled and hopelessly ruined within the short space of some fifteen years. At Solomonville, the great barranca which has cut its way up the valley is about fifty feet across and from ten to twelve feet in depth. From this point it extends southward for sixty to seventy miles, with tributary washes and barrancas branching out to a yearly increasing distance on either side.

In the midst of this ruined district, I once talked with a lone and aged rancher, too old and too poor to move away, the personification of the ruined country about him, who had witnessed, and who had helped to bring about the destruction of this valley from the very beginning. He said that, fifteen years before, the first night that he camped there he tied his four horses to his four wagon wheels, where they grazed in plenty during the night. At the time of our conversation, although it had been raining for just a month past, and although the San Simon Creek contained a stream of running water, the country was as bare of grass as a floor. Here and there was to be found a patch of rank cockle burrs, and on the adjacent flats the few remaining cattle were filling themselves with pusley and red-root. Such is the scene of ruin which now replaces what were the former beauties of a favored country.

Let us consider this typical instance in its various industrial bearings: In the first place, the stock industry itself has suffered, in some localities almost to the point of extermination. The ruinous methods which seem inevitable upon a public range, which, being everybody's property, is nobody's care, have so destroyed its value, and have so changed the original condition of the country that in many cases, in spite of the present high



prices of cattle, the ranges now carry but a tithe of what they once did. It is impossible to procure definite figures; but rough judgment, based upon observation and conversation, with the stockmen of this depleted range, shows it to have been almost commercially destroyed. In the San Simon valley alone, it is judged, on these grounds, that within the past decade the number of cattle has fallen off from 75 to 90 per cent. In the Sulphur Spring valley, adjacent, it is stated that during the season of 1900, which was a very severe one, the losses of cattle by starvation were from 15 to 50 per cent., averaging about 25 per cent.

These instances represent the condition of the cattle industry in scores of great valleys, and from the stockman's point of view, indicates the urgent need of administrative measures planned for the salvation of this great industry.

But the hardship merely begins with the stockman; far below him, on the land adjacent to the rivers, is the irrigating farmer, who depends for by far the most part upon the range watersheds for his water supply. As previously stated, the vegetation on the range, especially the bunch grass in the lower swales, at one time so obstructed the flow of water that the rainfall found its way but gradually over the surface of the ground to the main water-courses. I well remember once being overtaken by a flood in country of this character. A heavy storm in the mountains, some fifteen miles away, gave rise to a great volume of water, which slowly and almost noiselessly found its way through the abundant grass to lower levels, and the first intimation of the presence of the flood, which was several miles broad, was the splashing of my horse's hoofs in the quietly moving sheet of water.

A large portion of such a flood also sinks into the ground, joins the underflow, so characteristic of the great valleys of the Southwest, and finds its way to lower levels yet more slowly. At one point with which I am familiar, the water comes a distance of ten miles in about three months in just this way.

The result of these agencies was a constant and not excessively muddy flow of water whose fluctuations were not extreme, thus yielding to the irrigating farmer a comparatively regular and cleanly supply of irrigating water.

When a range has been bared by cattle, however, and its surface ground to powder by their hoofs, and especially when the gullying process has begun in the larger valleys, the rains quickly collect into sudden and destructive floods of extremely muddy water, which pass away as quickly as they come. The water supply is thus made much less constant in character, overwhelming the farmer with excess one week, and threatening him with drouth the next. The excess of mud contained also embarrasses the irrigator, increases the expenses of maintaining his ditches in good order, and often causes severe loss in coating the leaves of tender vegetation with mud. The quantity of mud which may result under these conditions may be judged when I state that in my laboratory I have several composite samples of water, each representing one week's flow of the Gila River at Florence, which, after 12 months settling, show 6 to 18 per cent. by volume of mud. This enormous quantity of sedimentary matter for such considerable periods of time shows not only the magnitude of the erosion which is being accomplished by these rivers, but indicates the difficulties which they impose upon the farmers using the water.

## THE FIRST SESSION OF THE YALE SUMMER SCHOOL OF FORESTRY.\*

BY GEORGE D. SEYMOUR.

IMPRESSIONS OF A VISITOR.

THE Yale Summer School of Forestry at Milford, Pike County, Pa., has completed a very successful inaugural session. Twenty-seven students were enrolled, twenty men and seven women. Of these students six were from New York state, six from Massachusetts, five from Connecticut, three from the District of

Junior class of the Sheffield Scientific School, and one Harvard Sophomore. Among the women at the Summer School was the Associate Professor of Botany in Wellesley College, who has a Ph.D. degree from Zurich, and is well known for her studies in systematic botany. The women were quartered in the hotels or



Courtesy Yale Alumni Weekly.

LECTURE HALL AND LABORATORY, YALE SUMMER SCHOOL OF FORESTRY; MILFORD, PA.

Columbia, two from Pennsylvania, two from Maryland, and one each from New Hampshire, Ohio and South Carolina.

Among the students were three Yale graduates, two undergraduates in the

in cottages in the village. The men were located in a camp on high ground overlooking the beautiful valley of the Delaware, and about a quarter of a mile distant from the famous falls of the Sawkill River.

A more healthful location for a camp could scarcely have been found. Each

\*The text and illustrations of this article are reprinted here through the courtesy of the *Yale Alumni Weekly*.

man in the camp had a tent of his own. There were additional tents for guests, and a large dining tent in which the men in camp as well as Professor Graves, the Director of the School, and Professor Toumey had their meals. The blue flag of Yale floated from a tall pole in front of the "Administration" tent. There were abundant opportunities for recrea-

first instructed the men in the use of a variety of instruments for determining the diameter, height and the amount of available timber in trees. He then divided them into squads of three and sent them off into the woods to use the instruments. During the entire forenoon he moved through the woods from party to party and gave them further instruction. At the



DINING TENT AT YALE SUMMER SCHOOL OF FORESTRY.

tion, an open field adjoining the camp furnished a good baseball ground, while the pools in the Sawkill provided baths in the clearest and coldest of water.

#### A DAY'S WORK IN THE SCHOOL.

But the students did not need much more exercise than they got in connection with their class work, much of which was in the field, for Professor Graves and Professor Toumey took the students into the woods as well as lectured to them in the School Building. One day when the writer was at the school, Professor Graves

close of the morning the students returned to the School with their instruments, and submitted to him their note-books containing the results of their work. The same afternoon Professor Toumey instructed the students in botany and the use of the microscope.

The next morning Professor Toumey gave a lecture in the school building on "Native Trees and Ways of Identifying Them," illustrating his lecture with specimens of trees from the neighborhood. In the afternoon Professor Graves lectured on silviculture, with particular reference

to the natural reproduction of trees to take the place of those harvested.

#### WHOLESOME CAMP LIFE.

At a later visit the writer was struck, first of all, by what three weeks of wholesome life in camp, with good food, had done for the students, who looked ruddier, and in every way better. It was a joke among them all how much they had increased in weight, and there was a rivalry between the two tables as to which had gained more in the aggregate. One tall fellow had gained thirteen pounds, bringing the aggregate gain at the table at which he sat up to about forty-one pounds. The students with whom the writer talked were enthusiastic about the school and the pleasant time they were having. One big Ohioan said he had spent five summers in camp, and had never had such a good time in his life. Some of the younger men who had not had college advantages were planning to take special courses of study on their return home, so as to be able to pass the Yale Forest School entrance examinations in 1902 and 1903.

#### TREE FELLING.

The following day, Monday, was another of Professor Graves' field days to be devoted to "Stem Analysis." It rained so hard that he did not take the entire class into the woods in the forenoon according to the schedule, but the pouring rain did not prevent him from going into the woods with two students and felling several trees so as to save time for the demonstration of the afternoon. Here in the woods he proved himself as much at home with an axe in his hand as in the lecture-room, and an expert woodsman.

In the afternoon all of the men in the class were equipped with calipers, tapes, rules, and blanks, such as are issued by the Bureau of Forestry at Washington. The men were divided up in squads, and under Professor Graves' direction each student measured the height of each stump, its average diameter inside and outside of the bark, the number of rings, indicating the age of the tree, the width of the rings, indicating the rapidity of the growth, the

length and diameter of the separate logs, the length of the tree to the crown, the length of the tree including the crown, and so on through all the measurements comprehended by "Stem Analysis." Sufficient trees were felled to afford ample illustration of the modes of securing these measurements. Later on the results of the work were reviewed and commented upon by him at the school building.

The foregoing suggests the character of the work done. Both Professors Graves and Toumey bring to their work the fruits of extensive study as well as wide experience in field work, and both have a special aptitude for teaching. The courses included lectures in Silviculture, Forest Protection, and Forest Measurements, by Professor Graves; and in Forest Botany, Introduction to Forestry, and Tree Planting by Professor Toumey, and comprehend lectures in the school building, field work, and laboratory work.

This curriculum does not, of course, compare with that of the Yale Forest School at New Haven, which is designed to give a thoroughly scientific knowledge of, and training in, the entire subject of Forestry, while the Summer School, though offering instruction of a substantial character, is designed for those who do not wish to take, or who are not ready to take the more advanced courses at regular Forest Schools. No attempt has been made in this sketch to go into the more technical side of the work at Milford, but only to give the impressions of a visitor to the school.

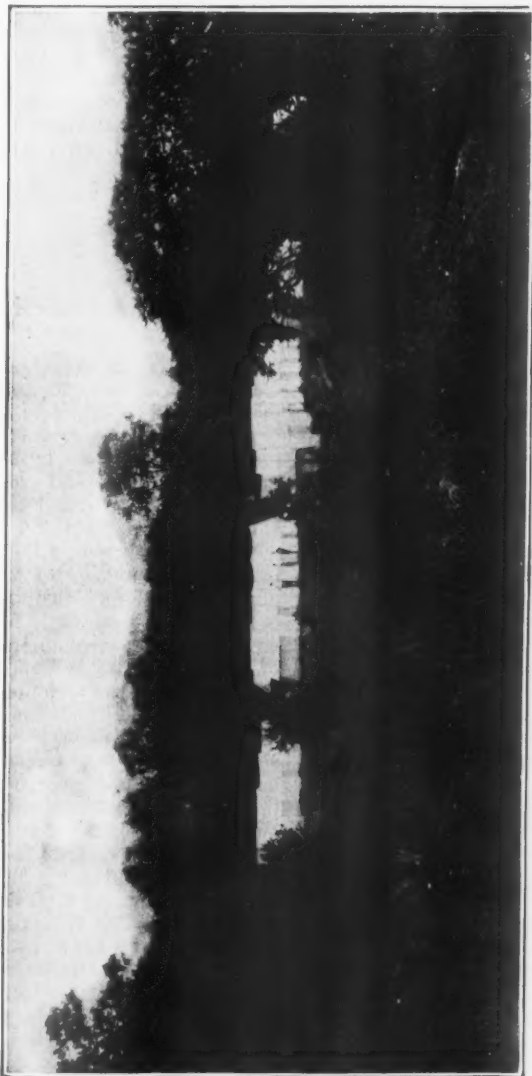
The country about Milford is wild and densely wooded, and affords excellent opportunities for studying our native trees. Near the camp is an acre of ground planted in the early spring by Professor Graves with red and white pine seedlings, some in the full light, some in partial shade, and some in heavy shade. This experiment in tree planting already shows the differences of growth under different conditions of light and shade.

#### EXCEPTIONAL ADVANTAGES OFFERED.

Professor Graves seems to have imparted to the students the same feeling of enthu-

siasm and *esprit de corps* that he secured last year at the Yale Forest School. Most

tage of the opportunities afforded at Milford. It would be hard to find a sturdier



Courtesy Yale Alumni Weekly.

CAMP AT YALE SUMMER SCHOOL OF FORESTRY; MILFORD, PA.

of the men were under twenty, but among the students were several older men who have found it worth while to take advan-

and manlier group of young fellows, the writer thought, than were assembled at the school.

During the session of the Summer School, it was visited by Mr. Gifford Pinchot, Forester of the U. S. Dept. of Agriculture, who was mainly instrumental in founding the Yale Forest School, and by Capt. Geo. P. Ahern of the U. S. Army, who was graduated from the Military Academy at West Point in 1882 and from the Yale Law School in 1895. Capt. Ahern is now Director of the Bureau of

Forestry of the Philippine Islands, which controls fifty million acres of public forest land.

The Yale Summer School of Forestry is due to the generous interest of Mr. James W. Pinchot, of Grey Towers, who has supplied the necessary building and equipment. The school is well equipped with microscopes and a variety of other instruments, and a small but well chosen library.

---

### INVESTMENTS OF SAFETY AND PROFIT.

THE following article is a clear and concise argument in favor of the management of private timber holdings along the lines of practical forestry. It is also quite suggestive of the present tendency of lumbering when it is stated that the article was published as an editorial in a recent number of the *American Lumberman*, one of the leading lumber trade journals of the country, and from whose pages we reprint it.

"The preservation of the forests of the United States rests in the hands of private timber owners with merely the assistance of the state and federal governments. This is so because practically all the timber lands of much value for lumber purposes are owned by private individuals or corporations.

"Until within a few years lumber values were such that private parties making a business of lumbering, instead of merely making a lumber business accessory to some park scheme, could not afford to do the expensive logging necessary to preserve the forests. To cut only trees above twelve or fifteen inches in diameter involves a considerable added expense over cleaning the ground as they go, and to clean the ground of tops and other inflammable debris is still another expense which would put a business so conducted almost out of competition with that of the ordinary sort. Lumber is now high enough, however, so that if lumbermen will be content with a

nominally lighter annual profit they can make preservative lumbering pay and feel that what they sacrifice in current profits or in actual money returns will be more than compensated for by the increase in the value of the capital remaining in the timber, by growth and steadily higher values.

"We wish again to call the attention of heavy timber owners to a phase of the question, heretofore mentioned, which in the past has been neglected and which now can receive recognition only because of the changed conditions surrounding the timber business and the lumber trade. It is the advisability of making their permanent investments in timber. The average lumberman buys timber solely as the basis of the lumber manufacturing operation. He will put in a mill calculated to cut it out in about ten years, for that is considered the average life of a sawmill; then he will bend every energy to cutting out that timber and marketing it—that is to say, converting it again into money. When he shall have completed this process of conversion he must either repeat the operation or, if he feel that he is in position to retire, find a permanent investment for his capital in some other line. He will go into banks, he will buy city real estate, or stocks or bonds, or perhaps put his money with a trust company. In any event he has it in something with which he is not familiar, in which he has



no interest, and thereafter worries about his investments in lines which are foreign to him. How much better it would be for him to place his investments in the business which he is familiar, where he is assured of their safety and in which profits are at least as large as they are in safe securities of other sorts.

"What the capitalist, as such, wants, is an investment that is safe, permanent and yields a certain income, even though it may be small. Where can such an investment more surely be found than in timber handled on the basis of scientific forestry? The active lumberman looks askance at such an investment because its rate of interest is so low as compared with the profits to which he has been accustomed; but he should remember that the profits on the average lumber business are as a matter of fact small, the apparent profits being largely due or transformable into the increase in value of timber lands.

"A timber investment is as safe as any real estate investment, except for the danger of fire and thievery. The fire hazard is practically non-existent in yellow pine, cypress, redwood, and some other woods, and the operations of timber thieves can be limited or entirely prevented at the expenditure of very little money for protection. It is a permanent

investment because, operated under methods of forestry it will perpetually produce a crop, and it will yield a certain return because, operated in that way, the annual crop, at present and prospective lumber values, will, while maintaining the principal investment, pay a small interest on it.

"There is this to be said in regard to many lumbermen, that their timber holdings are too small to serve as the basis of an operation of this sort. Where this is the case they can well afford to become parties to some consolidation of interests which will make an aggregate large enough to be handled in this perpetual way. Such consolidations are likely to be numerous in the future, and if we were to give advice to our readers in such circumstances it would be, not to sell outright their timber holdings and then have to seek elsewhere for investment, but to become parties to the consolidation and thus have their investment in things with which they are entirely familiar. The lumberman can thus continue to be a lumberman, a timber owner can thus continue to have his investments in that kind of property, and yet be relieved from the active management, if he so desires, and feel that he has an investment safer and in the long run more profitable than any other that can be presented to him."

## FORESTS AND RESERVOIRS.\*

By F. H. NEWELL,

Hydrographer, U. S. Geological Survey.

THE full development of the resources of the United States, especially of the arid West, rests upon a complete utilization of the water for irrigation, power, and municipal, as well as domestic supply.

Furthermore, the conservation of the waters, and the protection from pollution, both natural and artificial, rests largely upon the proper treatment of the forests at the headwaters of the streams. There can be no question as to the beneficial influence of these forests, although the extent of this influence may be, and still is open to investigation and discussion. The forests, with the accumulation of vegetation

\* Extract of a paper read at the summer meeting of American Forestry Association, Denver Col., August 27-29.



SAN CARLOS DAM SITE, GILA RIVER, ARIZONA.

upon the ground, serve to break the force of the rain and regulate the run off; excessive soil erosion is to a large extent prevented, and the waters drained from the forests are as a rule free from suspended mineral matter.

height, holding back the water from melting snow, or from occasional storms. These natural reservoir sites are being surveyed and their capacity and cost ascertained. The amount of water available by storage is also being measured and



A WELL WOODED SLOPE AFFORDING PROTECTION TO SNOW OR RAINFALL.

The Government has set about the protection of the forests upon the headwater streams of the West, and Congress has under consideration legislation tending to promote the construction of large reservoirs within or adjacent to the forest reserves. There are to be found on the headwaters of the streams many valleys whose outlets can be closed by a dam of moderate

the facts recorded, so as to make it possible to know definitely the benefits to be derived from the construction of these hydraulic works.

One of the sources of anxiety and uncertainty in regard to these reservoirs is the matter of silt or sediment. The flood waters roll along sand, gravel, and even boulders, depositing them wherever the

current is checked. These floods, entering the artificial reservoirs, are brought to a halt and quickly lay down their load, forming a coating, or layer, of mud in the reservoir, tending to greatly diminish the storage capacity. If the water comes from forested slopes, where the soil is protected and held by roots, the amount of sediment may be negligible; but if, on the other hand, these forests are cut away, the under-

brush and humus burned, the driving storms soon attack and move the loose earth and disintegrated rock, starting it on its journey down the slopes, to be finally caught in the reservoir below. Thus it happens that it is of first importance for the prolonged life of the reservoir that every care should be taken to perpetuate the forest cover upon the catchment area, wherever this can assist in holding the soil.



BURNT-OVER HILLSIDE IN BITTERROOT VALLEY, BITTER ROOT FOREST RESERVE, MONTANA.  
TIMBER BURNT OFF TWENTY-FIVE YEARS AGO AND NO REFORESTATION.  
LACKS PROTECTION FOR SNOW OR RAINFALL.

# The Forester,

PUBLISHED MONTHLY BY

## The American Forestry Association,

AND

Devoted to Arboriculture and Forestry, the  
Care and Use of Forests and Forest  
Trees, and Related Subjects.

The FORESTER assumes no responsibility for  
opinions expressed in signed articles.

All members of the American Forestry Association receive the FORESTER free of charge. Annual fee for regular members \$2.00. An application blank will be found in the back of this number.

All contributions and communications should be addressed to the EDITOR,

100 Atlantic Building, Washington, D.C.

Subscriptions and remittances should be sent to  
41 North Queen St., Lancaster, Pa., or 100 Atlantic  
Building, Washington, D. C.

Copyright, 1901, by the American Forestry Association.

Vol. VII. SEPTEMBER, 1901. No. 9.

**William McKinley.** In common with the whole country *The Forester* mourns deeply the untimely death of President McKinley; a man of whom it can be safely said was more universally loved during his lifetime than any other American. As soldier, statesman and patriot, William McKinley served his country well, and it is greatly to the credit of our people that they recognized this so promptly and showed appreciation in so many ways. Mr. McKinley, as the most devoted of husbands, upright and honest in dealings with his fellow men, kindly, courteous, unselfish, showed that even in the great temptations of our political life a man may lead a pure life. William McKinley combined in an unusual degree the best qualities of our American citizenship and he will live longest in the hearts of his countrymen as a good example.

The cause of forestry loses a friend in the death of Mr. McKinley. During his four and a-half years as chief executive he continued the policy, inaugurated by President Harrison and continued by President Cleveland, of setting aside portions of the public lands as forest reserves. During his administration many new reserves were created, as late as July of the present year he proclaimed the Wichita Reserve in

Oklahoma, and in August the Payson reserve in Utah.

From his office window the writer can see nearby the spot once occupied by Ford's theatre where Lincoln was assassinated. Just across the street is the house where Lincoln died. Over the doorway of this house is a picture of Lincoln, framed in mourning, and just under it one of Mr. McKinley, the man we mourn to-day. Five blocks away is the spot where James Garfield met his death at the hand of a cowardly assassin. All this brings home the horrible truth that in just thirty-six years, out of the seven presidents selected during that time by the people of the United States, three have been assassinated! This in the "land of the free and the home of the brave."

The people of the whole country are demanding that the anarchists shall be driven from the land. Let every good citizen see that this demand is translated into an intelligent law and carried into execution; that it shall not, like so many of our reform movements, hysterical in inception, die a natural death while we go back in fancied security to the prosaic business of making dollars. Good citizens will not countenance speeches on the street corner toasting the assassin of our President. This is the time for action.

And while we are getting rid of the anarchist there is a leading cause of anarchy that demands our attention—the sensational newspaper.

Readers of *The Forester* need no description of this class of journals. Their demoralizing influence is well known, and it is an evil that will take more than shouting to overcome. There is one effective way of getting rid of this blot—through its business office. Don't buy the paper, ask your neighbor not to read it. Don't advertise in it, ask others to refrain from using its columns. Sensational journalism has no conscience to appeal to; strike at its one vulnerable spot—the business office. The anarchist must go.

### The Denver Meeting.

Perhaps the most significant thing about the recent meeting of the American Forestry Association at Denver was

the full and accurate accounts published in the daily papers. The Denver papers were most generous in devoting space to publishing extracts from the many excellent papers read. Also the telegraphic reports to papers of other cities, both East and West, contained very full accounts of the Association's doings.

In addition to the liberal notices in the daily papers the leading lumber trade journals of the country not only published accounts of the meeting, but quoted from a number of the papers read.

This willingness of the press to give it space is one of the surest indications that news concerning forestry is read with interest by a great many people.

Of the meeting and the Association the Baltimore *American* has the following to say editorially: "The American Forestry Association which has been in session at Denver brought its meeting to a close yesterday. It is doing a good work, and a work which sooner or later must be undertaken by the entire people." An editorial in the Providence (R. I.) *Telegram* says: "The American Forestry Association has done, and is doing, an incalculable amount of good in its especial line."

**Forestry in the Philippines.** Friends of forestry view with great satisfaction the thorough preparations that are being made to establish an effective forest service in the Philippines. The report of the work done during the first fiscal year by the Forestry Bureau at Manila is most encouraging; and the announcement by its director that the working force is to be increased, and a definite

forest policy inaugurated throughout the archipelago at an early day, makes the outlook for forestry in the Philippines most promising.

With practically all of the forest lands in the islands under the management of this bureau, judging from results already accomplished, the exploitation of timber promises to be one of the most interesting economic problems in our far eastern possessions. With 50,000,000 acres of timber lands including nearly a thousand species of trees many of which are of great commercial value, it would seem that the Forestry Bureau at Manila will play an important part in the industrial development of the archipelago. Demand for timber at home will rapidly increase now that the insurrection is at an end and building going on in earnest. And home markets satisfied Philippine timber will find many other markets in the Orient, especially in China.

It is indeed fortunate for the proper exploitation of these timber lands that their management has been upon the basis of scientific forestry from the beginning. The appointment of Captain George P. Ahern as director of the Forestry Bureau at Manila was an excellent selection.

Captain Ahern combines decided business ability with enthusiasm for forestry, and his effective handling of the Bureau during its first year presages still greater success in the future.

The inauguration of a definite forest policy on all woodlands in the Philippines will be pushed forward rapidly, and the work there will be watched with keen interest on this side of the world.

## NEWS, NOTES, AND COMMENT.

**Tennessee Forest Association.** In response to an invitation sent out from Sewanee, Tenn., a number of the friends of forestry met at that place on August 7th and proceeded to organize the Tennessee Forest Association.

The meeting was held at the University of the South, in Walsh Memorial Hall,

and as a first step toward the formation of the organization, Professor Charles A. Keffer, of the University of Tennessee, was chosen temporary chairman, and Mr. Percy Brown, of Spring Hill, secretary. Professor Keffer called the meeting to order and spoke briefly of the forest resources and possibilities of Tennessee; of



the necessity to the State for some action tending toward their preservation, and of the good work in that direction which an association like that contemplated could accomplish. Letters from absent well-wishers were then read. Among those expressing regret at inability to be present were Governor McMillin, President Dabney of the University of Tennessee; Chancellor Kirkland, of Vanderbilt University; Dean Garrett, of the University of Nashville; Colonel J. B. Killebrew, of Nashville, and Dr. C. A. Schenck, Forester of the Biltmore estate. Governor McMillin wrote: "Tennessee is more blessed with forests than many of the older states of the Union, and we ought by every means to husband them and encourage the growth of new ones. I wish you the most abundant success in this work, and I wish you to rest assured that I will gladly serve you in the future in whatever way I can."

Among those who made short speeches were: Mr. R. W. Powell, president of the Powell Lumber and Mining Company of Westel, who gave his personal experience in dealing with the problems of forest and water supply in the Sequatchie Valley; Major G. R. Fairbanks, of Florida, who outlined the work accomplished by the horticultural societies of his State in the stimulation of interest in forest preservation, and Dr. B. L. Wiggins, Vice Chancellor of the University of the South, who told of the lively interest taken in forestry by the University, which has taken practical form as shown by the placing of the University domain under the management of the Bureau of Forestry of the United States Department of Agriculture. That this plan of coöperation was, from the standpoint of both the forester and financier, a successful one was evident in the remarks of Dr. Wiggins. Mr. John Foley, of the Bureau of Forestry, was next called upon for detailed information regarding the forest management at Sewanee, and replied describing the forest conditions, the effects of fire, grazing and past management, and outlined a scheme for the better treatment of the tract. The meeting then proceeded to the question of organization, and after some discussion a

committee to draft articles of association was appointed and a recess until 3 P. M. taken.

The afternoon session was devoted to consideration of the constitution drafted by the committee, and to the election of officers as follows: President, Dr. B. J. Ramage, of Sewanee; Vice-President, for East Tennessee, Professor Charles A. Keffer, of Knoxville; Vice-President for Middle Tennessee, Mr. J. H. Baird, of Nashville; Secretary and Treasurer, Dr. W. B. Hall, of Sewanee. The next meeting of this Association will be held at Nashville, Tenn., in November.

The object of the Tennessee Forest Association is: "To secure and maintain a due proportion of forest area throughout the State; to disseminate information concerning the growth, protection, and utilization of forests; to show the great evils resulting from forest destruction in the decrease and unequal distribution of the available water supplies, the impoverishment of the soil, and the injury to various industries; to secure the enactment by the Legislature of such laws, and the enforcement of the same, as shall tend to increase and preserve the forests of the State."

Along with the announcement of the formation of the Tennessee Forest Association it is learned that the East Tennessee Iron and Coal Company, has made application to the Bureau of Forestry for a preliminary examination of their woodland tract looking to the making of a working plan. The tract for which the examination has been requested is located in Scott and Campbell counties, eastern Tennessee, and is 60,000 acres in extent. Mr. F. E. Olmsted, Field Assistant in the Bureau of Forestry, will make the examination in October.

When it is considered that the University of the South is already lumbering its tract under the direction of the Bureau of Forestry, and that Senator Wetmore is having a working plan made for his tract of 85,000 acres, it would seem that Tennessee is pointing the way toward an intelligent handling of the forest resources of the Southern States.

**Forest Meetings in New Hampshire.**

A course of lectures on forestry, under the auspices of the Society for the Protection of New Hampshire Forests was given during the week of August 19-24th, at the leading hotels of the White Mountain district with a view of arousing a keener interest in the forests of that State among the many summer visitors.

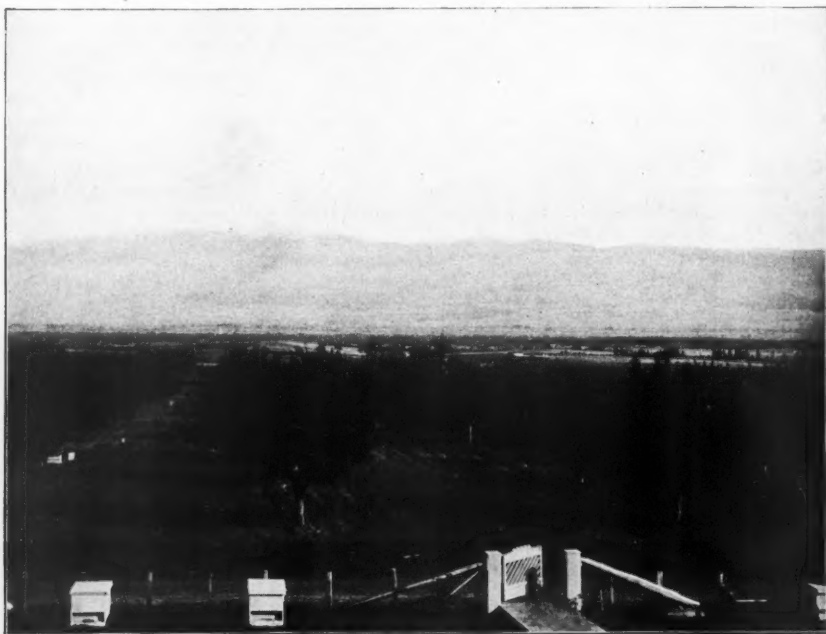
The speakers were Dr. John Gifford, of the New York State College of Forestry, and John D. Quackenbos, of New York. Dr. Gifford delivered an illustrated lecture on the "Forest Conditions of New Hampshire," while Dr. Quackenbos spoke interestingly on the subject of "Standing Forests in Relation to Public Health." These meetings attracted good sized audiences and aroused considerable interest in the preservation of White Mountain forests.

**Irrigation and the Forest.**

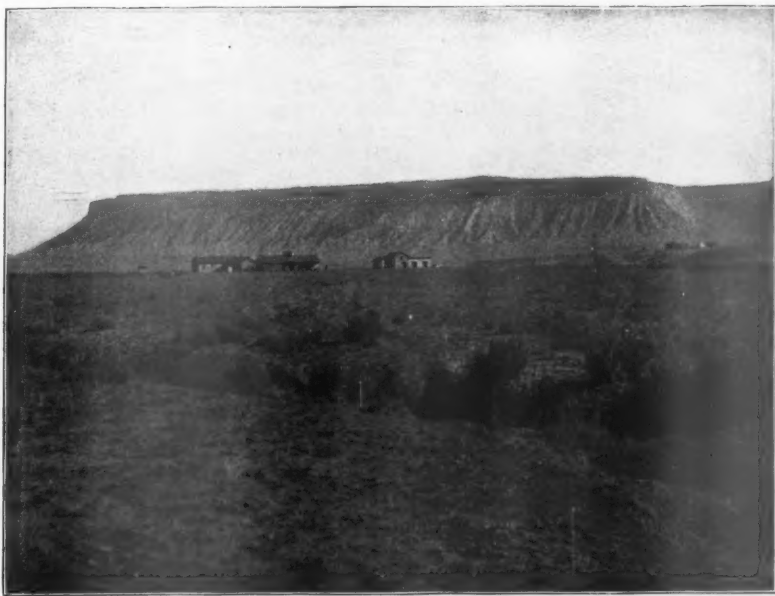
One of the most interesting addresses delivered at the Denver meeting of the American Forestry Association was that of Mr. George H. Maxwell, Executive Chairman of the National Irrigation Association. Mr. Maxwell's subject was "Irrigation and the Forest," and as his talk was *ex tempore* we are only able to give the short extract that follows.

Mr. Maxwell sounded a note of warning, condemning as "fatally, criminally and wickedly blind" the indifference with which we were watching the gradual destruction of our forests. In picturing graphically the results of deforestation in the far East, he said:

"Famine stalks through India because of deforestation, floods devastate China for the same reason. Look at northern Africa, at Persia, at Mesopotamia, at Transcaspia,



LAND THAT HAS BEEN MADE PRODUCTIVE BY IRRIGATION. FRUIT FARM IN BITTERROOT VALLEY, MONTANA.



A WESTERN VALLEY THAT CAN BE RECLAIMED BY IRRIGATION. MANY SUCH VALLEYS IN THE WEST.

and heed their warning; once fertile and fruitful, now arid, uninhabitable wastes, they stand as a warning that we should heed. Will we do so, or will we go on wasting millions while we watch our forest areas gradually destroyed?"

Mr. Maxwell made a strong plea for the appropriation of adequate money to establish a thoroughly competent patrol for the protection of the forests against fires.

Concluding his remarks, he said: "I was asked to speak of irrigation and the forest. I have done so, although I have not mentioned the word 'irrigation.' The forests are the source of all irrigation. We cannot irrigate without water. We cannot have water without forests. If we do not preserve them, we will have no irrigation."

**Foresters for the Philippines.** A Civil Service examination was held at Washington, D. C., on September 9th to select men for the forest service in the Philippines. The results

just made public show that Mr. R. G. Bryant, Mr. E. H. Hareford, Mr. William Klemme, Mr. W. W. Clarke, and Mr. Hagger passed the best examination and will accordingly be assigned to places in the personnel of the Forestry Bureau at Manila.

In addition to the above named men, Mr. S. T. Neely, who some years ago conducted a series of timber testing experiments for the Division of Forestry, has been employed to take charge of a timber testing laboratory to be established at Manila in connection with the Forestry Bureau. Mr. E. M. Griffith, at present Field Assistant in the U. S. Bureau of Forestry, has also accepted a position in the Philippine service.

The examination required that all candidates should be graduates of forest schools. Bryant, Clarke, and Klemme are graduates of the New York State College of Forestry at Cornell; Hareford comes from the Biltmore Forest School, while Neely and Griffith were already in the classified civil

service list. Mr. Hagger is a graduate of the Swiss Forest School and during the past year has had charge of the experimental forest of the Cornell School.

#### **Appalachian Forest Reserve.**

Interest in the proposed Appalachian Forest Reserve increases as the time for convening Congress draws near. The movement looking to the establishment of a forest reserve in the southern Appalachians began nearly two years ago and the efforts put forth by the many friends of the project have resulted in action by both the national government and the individual States concerned. Since the organization of the Appalachian National Park Association at Asheville, North Carolina, November 22, 1899, the following National and State legislation has been enacted: January 2, 1900, Memorial of the Appalachian National Park Association presented to Congress and referred to the Committee of Agriculture. April 17, 1900, officers of the Appalachian National Park Association appear before the Committee of Agriculture presenting the cause of the Appalachian National Park Association.

April 21, 1900, Senator Pritchard introduced a bill praying for an appropriation of \$5,000 for a preliminary investigation. April 26, 1900, Senator Pritchard's bill asking for an appropriation for investigation passed, becomes a law July 1st.

During the summer of 1900, Bureau of Forestry, U. S. Department of Agriculture, with the coöperation of the Geological Survey, investigate the Southern Appalachian Mountains. January 1, 1901, Secretary Wilson, of the Committee of Agriculture, sends report to Congress through the President regarding the preliminary investigation made. January 19, 1901, President McKinley presents Secretary Wilson's report to Congress recommending this report to the favorable consideration of Congress.

On January 10, 1901, Senator Pritchard introduced a bill praying for an appropriation of \$5,000,000 for the establishment of a forest reserve in the Southern Appa-

lachian Mountains, approximating two million acres. The bill was referred to the Committee on Agriculture. January 28, 1901, Senator Pritchard's bill was reported back favorably by the Committee of Agriculture.

On January 18, 1901, the Legislature of North Carolina passed a bill ceding to the National Government the authority to acquire title for forest reserve purposes with exemption from taxes. Within three months the legislatures of Georgia, Alabama, and Tennessee passed like measures.

Early in July of the present year Hon. James Wilson, Secretary of Agriculture, accompanied by Gifford Pinchot, chief of the Bureau of Forestry; W J McGee, United States Bureau of Ethnology; F. H. Newell, United States Geological Survey; Prof. J. A. Holmes, State Geologist of North Carolina, and Hon. Theo. F. Klutz, member of Congress from Seventh District, North Carolina, spent ten days in the Southern Appalachian Mountains making a personal investigation of the sites where it is proposed to locate the Appalachian Forest Reserve.

#### **Death of Captain Cross.**

In the death of Captain Judson Newell Cross, president of the Minnesota State Forestry Board, at Minneapolis, Saturday, August 31st, the cause of forestry lost an earnest champion and able advocate. Death came very suddenly, while Captain Cross was apparently in excellent health, from the bursting of a blood vessel in the brain.

For many years—since his boyhood, in fact—Captain Cross was a lover of trees, and was one of the first laymen to take an interest in the preservation of the forests. It may be said of him that his profession was the law, and his hobby forestry. He was a member of the Minnesota State Forestry Association and president of that body in 1899-1900. He laid the foundation of the Minnesota forestry system and the two laws passed by the legislature on that subject were his handiwork and owed their passage in large measure to his efforts. He was an untiring reader of all

books and publications on forestry and was remarkably well-informed as to forestry both in United States and Europe. He was devoted to the fact of a national forest reserve in northern Minnesota, and had made a study of the effect of deforestation upon the rivers of the Lake Superior states.

Captain Cross was born January 16, 1838, at Porgueland, Jefferson County, N. Y., and was descended from a long line of New England ancestors. His boyhood was spent at Richville, N. Y., and at the age of 17 he entered Oberlin College, Ohio. From that time until the outbreak of the civil war he was engaged in attending college, teaching and clerking in a country store. He was the second man to get his name on the roll of the first company formed at Oberlin, Company C of the Seventh Ohio Infantry, of which he was first lieutenant. He was severely wounded and taken prisoner at the battle of Cross Lane, August 26, 1861. After being recaptured, made captain, and sent home for treatment, he rejoined his regiment early in 1863, but his wound forced him to resign. He then entered Albany Law College, but soon returned to service with the War Department as a lieutenant of the Fifth Veteran Reserve Corps. He was promoted to be captain in October, 1863, and in April, 1864, was adjutant general of the military district of Indiana. In June he was ordered to Washington as assistant provost general. He served with the reserve corps until the end of the war when he entered Columbia Law School, N. Y., but soon took up his course at Albany, where he was graduated in 1866. He settled at Lyons, Ia., having married Clara Steele Norton, of Pontiac, Mich., at Oberlin, September 11, 1862. He removed to Minneapolis in 1875.

As city attorney of that city from 1884 to 1887 he formulated a method of limiting the territory within which saloons may be located known as the "patrol limits system." Its success in keeping saloons out of residence districts and confining them within a limited territory has given it wide celebrity. He was a member of the first Minneapolis park commission and in 1891 he was appointed United States

immigration commissioner and at once proceeded with other commissioners to Europe where he spent some months investigating immigration problems. He was a member of the G. A. R., the Loyal Legion, and vice-president of the American Forestry Association for Minnesota.

Captain Cross left behind him a splendid reputation as a lawyer, a good citizen, and a scrupulously honest and honorable man. He is survived by four grown children and his wife.

**Fire Record.** The following forest fires during the month of August have been reported:

**Pennsylvania.** At Bellefonte two men have been convicted of maliciously starting forest fires in Center County. The culprits were sentenced to six months in jail; this is one of the first instances in the state where a conviction has been secured.

**Oregon.** For many days during August a great forest fire raged along North Pine and Fish Creeks causing the destruction of an immense amount of timber and threatening ranch property. Early in August a fire broke out in the mountains back of North Pole Mine near Bourne and for some time burned fiercely threatening the mine property and a large body of fine timber. It is supposed that the fire was caused by carelessness on the part of campers.

**California.** One of the fiercest and most destructive forest fires in years raged in Shasta County along the headwaters of the Stillwater about ten miles north of Redding. A number of farm houses were destroyed and at the last report the fire had burned over an area twenty miles long and five miles wide and had not yet been extinguished.

**Maine.** A forest fire near Sorrento came close to sweeping over that town a few days since. It was only through the combined efforts of the people in digging trenches and carrying water that stayed the progress of the flames. The fire departments of the neighboring towns were also called upon for assistance.

ORGANIZED APRIL, 1882.

INCORPORATED, JANUARY, 1897.

## THE AMERICAN FORESTRY ASSOCIATION.

### OFFICERS FOR 1901.

#### *President.*

Hon. JAMES WILSON, Secretary of Agriculture.

#### *First Vice President.*

Dr. B. E. FERNOW, Ithaca, N. Y.

#### *Corresponding Secretary.*

F. H. NEWELL, Washington, D. C.

*Recording Secretary*, GEORGE P. WHITTLESEY, Washington, D. C.

*Treasurer*, OTTO J. J. LUEBKERT, Washington, D. C.

#### *Directors.*

JAMES WILSON.

HENRY S. GRAVES.

EDWARD A. BOWERS.

FREDERICK V. COVILLE.

B. E. FERNOW.

HENRY GANNETT.

ARNOLD HAGUE.

F. H. NEWELL.

THOMAS F. WALSH.

GIFFORD PINCHOT.

GEORGE P. WHITTLESEY.

#### *Vice Presidents.*

SIR H. G. JOLY DE LOTBINIERE, Victoria, B. C.

CHARLES C. GEORGESON, Sitka, Alaska.

D. M. RIORDAN, Flagstaff, Ariz.

THOMAS C. MCRAE, Prescott, Ark.

ABBOTT KINNEY, Lamanda Park, Cal.

HENRY D. MICHELSEN, Denver, Col.

ARTHUR T. HADLEY, New Haven, Conn.

WM. M. CANBY, Wilmington, Del.

A. V. CLUBBS, Pensacola, Fla.

R. B. REPPARD, Savannah, Ga.

CHAS. DEERING, Chicago, Ill.

JAMES TROOP, Lafayette, Ind.

THOMAS H. MACBRIDE, Iowa City, Iowa.

D. C. BURSON, Kans.

JOHN R. PROCTER, Frankfort, Ky.

LEWIS JOHNSON, New Orleans, La.

EDWARD L. MELLUS, Baltimore, Md.

N. E. HANSEN, Brookings, S. D.

JOHN E. HOBBS, North Berwick, Me.

N. S. SHALEH, Cambridge, Mass.

CHARLES W. GARFIELD, Lansing, Mich.

WILLIAM TRELEASE, St. Louis, Mo.

CHARLES E. BESSEY, Lincoln, Neb.

JOHN GIFFORD, Princeton, N. J.

EDWARD F. HOBART, Santa Fe, N. M.

W. A. WADSWORTH, Geneseo, N. Y.

J. A. HOLMES, Raleigh, N. C.

W. W. BARRETT, Church's Ferry, N. D.

WM. R. LAZENBY, Columbus, Ohio.

A. C. SCOTT, Stillwater, Okla.

J. T. ROTHROCK, West Chester, Pa.

H. G. RUSSELL, E. Greenwich, R. I.

THOMAS T. WRIGHT, Nashville, Tenn.

W. GOODRICH JONES, Temple, Texas.

C. A. WHITING, Salt Lake, Utah.

FRANK W. ROLLINS, Concord, N. H.

REDFIELD PROCTOR, Proctor, Vt.

D. O. NOURSE, Blacksburg, Va.

ADDISON G. FOSTER, Tacoma, Wash.

A. D. HOPKINS, Morgantown, W. Va.

THOMAS F. WALSH, Washington, D. C.

ELIHU STEWART, Ottawa, Ont.

WM. LITTLE, Montreal, Quebec.

GEO. P. AHERN, Manila, P. I.

WM. R. CASTLE, Hawaii.

Annual Dues, \$2.00. Life Membership, with exemption from further dues, \$100.00.

Sustaining Membership, \$25.00 a year. Members receive THE FORESTER gratis.

### APPLICATION FOR MEMBERSHIP.

To the Assistant Secretary,

AMERICAN FORESTRY ASSOCIATION,

Washington, D. C.

DEAR SIR: I hereby signify my desire to become a member of the American Forestry Association

Very truly yours,

Name .....

P. O. Address .....







# The Plant World

*An Illustrated Monthly Journal of Popular Botany*

ESTABLISHED 1897

**The Only Non-Technical Periodical Devoted Exclusively to this Branch of  
Biology, and Dealing with all Phases of Plant Life**

Each issue of Volume IV, commencing in January, 1901, will be enlarged by four additional pages, and the special features of the volume will be as follows: A department of notes and suggestions for teachers; articles descriptive of various groups among the lower plants, illustrated by full-page plates; series of articles by prominent botanists recounting their collecting experiences in such countries as Cuba, Porto Rico, Alaska, etc.; discussions of important economic plants; book reviews, and general items. The 8-page supplement, devoted to a systematic account of all known families of flowering plants, which has been such a valuable feature of the past volume, will be continued and even more freely illustrated. Many of our subscribers have voluntarily testified to their appreciation of The Plant World, but the words of Professor Charles E. Bessey, of the University of Nebraska, are particularly gratifying to us, and should be remembered by everyone who contemplates taking a botanical periodical. He says "The Plant World has made a place for itself, and I cannot afford to be without it."

**Subscription Price, \$1.00 per Year. Sample Copy Free on receipt of 1-cent stamp.**

**THE PLANT WORLD COMPANY, P. O. Box 334, Washington, D. C.**

## NATIONAL IRRIGATION

IS THE

### OFFICIAL ORGAN

OF THE

## NATIONAL IRRIGATION ASSOCIATION

AND REPRESENTS THE MOVEMENT TO

**"Save the Forests and Store the Floods."**

The success of this movement will **DOUBLE** the Home Markets for Merchants and Manufacturers, and **DOUBLE** the capacity of the country to produce wealth and sustain population.

The way to assist the movement is to join **The National Irrigation Association** or **SUBSCRIBE** for **NATIONAL IRRIGATION**, Washington, D. C. Subscription, \$2.00 per year.

**Sample Copy Sent Upon Application, by Mentioning THE FORESTER.**



# The Plant World

*An Illustrated Monthly Journal of Popular Botany*

ESTABLISHED 1897

**The Only Non-Technical Periodical Devoted Exclusively to this Branch of  
Biology, and Dealing with all Phases of Plant Life**

Each issue of Volume IV, commencing in January, 1901, will be enlarged by four additional pages, and the special features of the volume will be as follows: A department of notes and suggestions for teachers; articles descriptive of various groups among the lower plants, illustrated by full-page plates; series of articles by prominent botanists recounting their collecting experiences in such countries as Cuba, Porto Rico, Alaska, etc.; discussions of important economic plants; book reviews, and general items. The 8-page supplement, devoted to a systematic account of all known families of flowering plants, which has been such a valuable feature of the past volume, will be continued and even more freely illustrated. Many of our subscribers have voluntarily testified to their appreciation of *The Plant World*, but the words of Professor Charles E. Bessey, of the University of Nebraska, are particularly gratifying to us, and should be remembered by everyone who contemplates taking a botanical periodical. He says "The Plant World has made a place for itself, and I cannot afford to be without it."

**Subscription Price, \$1.00 per Year. Sample Copy Free on receipt of 1-cent stamp.**

**THE PLANT WORLD COMPANY, P. O. Box 334, Washington, D. C.**

## NATIONAL IRRIGATION

IS THE

### OFFICIAL ORGAN

OF THE

## NATIONAL IRRIGATION ASSOCIATION


AND REPRESENTS THE MOVEMENT TO

**"Save the Forests and Store the Floods."**

The success of this movement will **DOUBLE** the Home Markets for Merchants and Manufacturers, and **DOUBLE** the capacity of the country to produce wealth and sustain population.

The way to assist the movement is to join **The National Irrigation Association** or **SUBSCRIBE** for **NATIONAL IRRIGATION**, Washington, D. C. Subscription, \$2.00 per year.

**Sample Copy Sent Upon Application, by Mentioning THE FORESTER.**



**THORBURN'S  
SEEDS**

They have been developed by careful, thoughtful propagation throughout the Nineteenth century. Thorburn's 116-page Century Catalogue of these

**Seeds of  
a Century**

is the 100th successive annual issue. If you would have a more beautiful lawn, or a more productive garden, send for it. It's free.

**J. M. THORBURN & CO.**  
(late of 15 John Street)  
36 Cortlandt Street, New York.

## New York State College of Forestry

CORNELL UNIVERSITY, ITHACA, N. Y.

Offers a complete four-year course in Forestry leading to the degree of Bachelor in the Science of Forestry (B.S.F.).

Special students for shorter terms accepted if properly prepared.

Tuition \$100 per year. New York State students free.

The Spring terms of the junior and senior years are spent in the Demonstration Forests in the Adirondacks, devoted to practical work.

Requirements for admission similar to those in other branches of the University. Send for prospectus.

Instruction in preparatory and collateral branches given by the Faculty of the University.

For further information, address Director of State College of Forestry, Ithaca, N. Y.

**B. E. FERNOW, LL.D., Director.**

**FILIBERT ROTH, Assistant Professor.**

**JOHN GIFFORD, D.Oec., Assistant Professor.**

## YALE FOREST SCHOOL, NEW HAVEN, CONN.

The course of study in THE YALE FOREST SCHOOL covers a period of two years. Graduates of collegiate institutions of high standing will be admitted without examination, provided they can show the requisite knowledge of Botany, Geology, and Inorganic Chemistry.

A Summer School of Forestry, under the direction of the professors in the Yale Forest School, will be open in July, 1901.

For further information address

**HENRY S. GRAVES,**  
*Director,*

**NEW HAVEN, CONN.**

Kindly mention THE FORESTER in writing.

